

## T841A,B Easy-To-See™ Heat Pump Thermostat

### TRADELINE®

#### INSTALLATION INSTRUCTIONS

### APPLICATION

The T841A, B Easy-to-See™ Heat Pump Thermostat provides 24 Vac control of 2-stage heating and 1-stage cooling in heat pump systems, using manual change-over.

The T841A Thermostat provides EM. HT.-HEAT-OFF-COOL System switching and AUTO-ON Fan switching. The T841B Thermostat provides HEAT-OFF-COOL System switching and AUTO-ON Fan switching.

The side of the thermostat features raised numbers for easy temperature setting by touch or sight. An audible click is heard with indents every two degrees as the temperature setpoint lever is moved. The thermostat wallplate features raised letters to aid in setting System switch and Fan switch settings. See Fig. 1.

The T841A,B includes a thermostat and wallplate.

Test holes are provided on the front of the thermostat to accommodate test meter probes without removing the thermostat from the wall. Remove the cover of the thermostat to expose the test holes that are labeled to correspond with the terminals on the thermostat back.

### OPERATION

The stages of heat *make* sequentially as the temperature drops. *Make* refers to the mercury switch initiating a call for heat or cool.

There is about 1°F (0.6°C) between stages so the second stage (auxiliary heat) *makes* only when the first stage cannot handle the load. This °F is the *interstage differential*.

For T841A Thermostat only (*not for T841B Thermostat*): light emitting diode (LED) indicators light when something specific happens within the system:

When AUX. HT. green or amber LED lights, auxiliary heat (second stage heat) is operating because the weather is so cold, the heat pump alone cannot handle the load.

When red EM. HT. LED lights, emergency heat is operating (electric strip heaters), because homeowner physically switched to EM. HT. position. See heating/cooling manufacturer instructions.



### MERCURY NOTICE

This control contains mercury in a sealed tube. Do not place the control in the trash at the end of its useful life. If this control is replacing a control that contains mercury in a sealed tube, do not place your old control in the trash.

Contract your local waste management authority for instructions regarding recycling and the proper disposal of this control, or of an old control containing mercury in a sealed tube.

### INSTALLATION

#### When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced technician.
4. After installation is complete, check out product operation as provided in these instructions.



### CAUTION

**Electrical Hazard.**

**Can cause Disconnect electrical shock or equipment damage.**

Disconnect power before beginning installation.

#### IMPORTANT

- To prevent interference with the thermostat linkage, keep wire length to a minimum and run wires as close as possible to the thermostat base.
- Do not short across coil terminals on the relay. This can burn out thermostat heat anticipator.
- Never install more than one wire per terminal unless a factory-supplied jumper with a spade terminal is used.



Location

Locate the thermostat between 4 ft (1.2m) and 5 ft (1.5m) above the floor in an area with good air circulation at average room temperature.

NOTE: Because of height restrictions of some disabled users, it may be necessary to lower the thermostat location to 4 ft (1.2m) above the floor.

- Do not install thermostat where it can be affected by:
- drafts, or dead spots behind doors and in corners.
  - hot or cold air from ducts.
  - radiant heat from sun, appliances or fireplaces.
  - concealed pipes and chimneys.
  - unheated (uncooled) areas such as an outside wall behind the thermostat.

This thermostat is a precision instrument and was carefully adjusted at the factory. *Handle it carefully.*

Mounting

The T841A,B can be mounted directly on a wall or a horizontal outlet box. Choose the method that best fits your installation. In replacement applications, check the existing thermostat wires for cracked or frayed insulation. Replace any wires in poor condition.

To remove the thermostat cover:

1. Grasp thermostat cover at the top and bottom with one hand.
2. Pull outward on the bottom edge of the cover until it snaps free of the thermostat base.
3. Carefully remove and save the packing material surrounding the mercury switches.

Wiring

All wiring must comply with local codes and ordinances. Follow equipment manufacturer wiring instructions when available.

NOTE: Four screws are provided with the thermostat; only two are required for mounting.

1. Run wiring (if necessary) to the location. If wiring is plastered into the wall, make a hole next to the wire and loosen the wires so they can be pushed back into the wall later.
2. Thread the wires through the hole.
3. Pull the wires through the entrance hole on the wallplate.
4. Connect the wires to the terminals on the back of the thermostat. See Fig. 1-3.
5. Push the excess wire back through the hole and plug any openings with packing material to prevent drafts that can affect thermostat performance.
6. Use two of the four screws provided to loosely secure the thermostat and the wallplate to the wall or outlet box through the two middle mounting holes. See Fig. 1.

NOTE: The sheet metal screws included with the thermostat are designed for use in plaster walls that do not need anchors.

IMPORTANT

*An incorrectly leveled thermostat causes inaccurate temperature control.*

7. Exactly level the thermostat using a spirit level or plumb line.
8. Tighten the screws in the middle mounting holes.
9. Replace the thermostat cover.

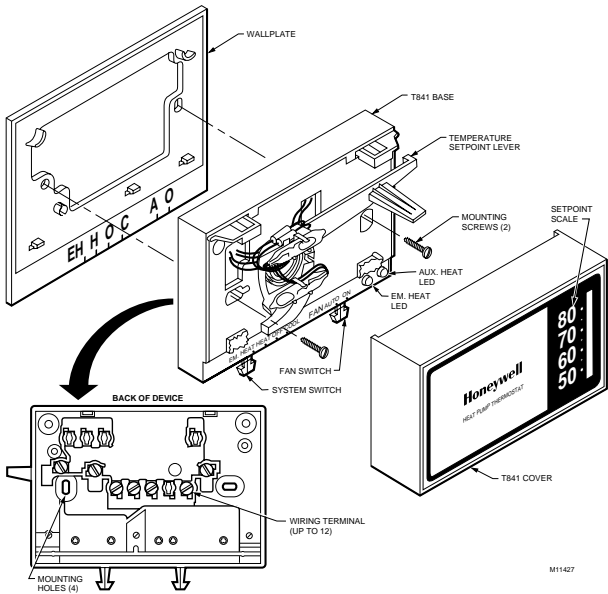
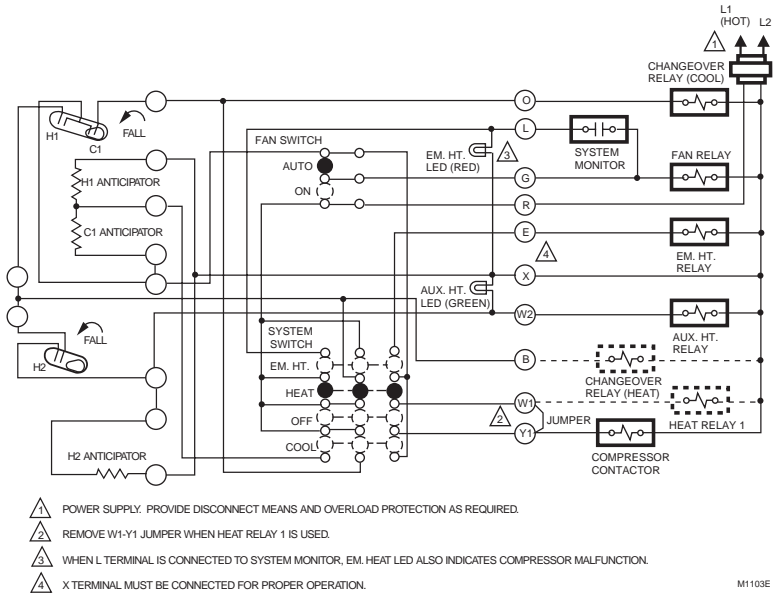
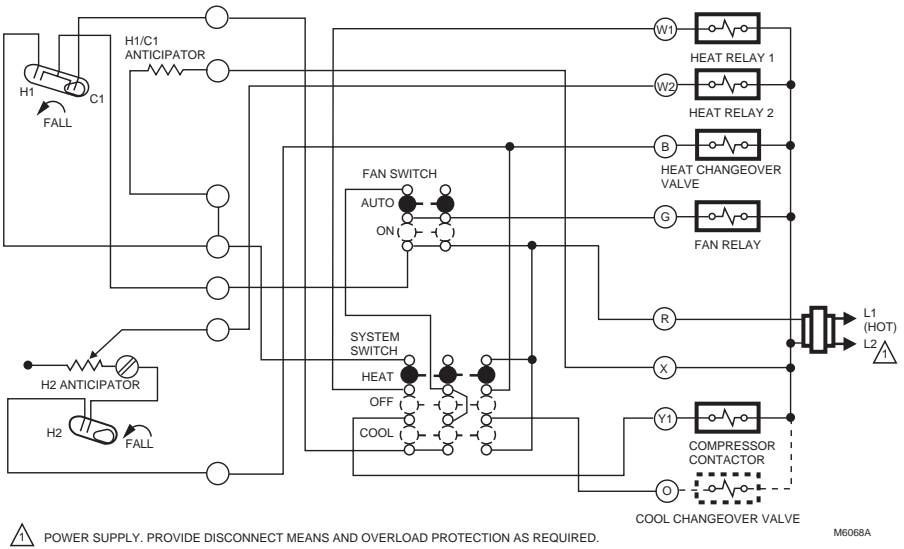


Fig. 1. Mounting thermostat to wallplate (T841A model shown).



**Fig. 2. Internal schematic and typical wiring diagram for T841A with AUX. HT. and EM. HT. LEDs. Provides heat or cool changeover relay control and automatic fan in emergency heat mode.**



**Fig. 3. Internal schematic and typical wiring diagram for T841B 2-stage heat, 1-stage cool, manual changeover.**

## SETTINGS

### Temperature Setting

The enlarged, raised numbers on the right edge of the thermostat can be used for easy temperature setting by touch or sight while moving the temperature setpoint lever to the desired temperature setting. The large 5, 6, 7 and 8 refer to 50°F (10°C), 60°F (16°C), 70°F (21°C) and 80°F (27°C), respectively. A click is heard with indents every two degrees as the temperature setpoint lever is moved. See Fig. 1.

### System Switch Setting

The enlarged, raised letters on the left bottom edge of the wallplate can be used for easy recognition of System switch settings:

For the T841A Thermostat: The large EH, H, O and C refer to EM. HT., HEAT, OFF and COOL.

For the T841B Thermostat: The large H, O and C refer to EM. HT., HEAT, OFF and COOL.

The System switch settings control the system operation as follows:

EM.HT (only on T841A): Emergency heat relay is energized. Cooling system is off. Compressor is de-energized. Fan runs on call for heat if the Fan switch is in the AUTO position. EM. HT. LED is on.

HEAT: Heating system is automatically controlled by the thermostat. Cooling system is off.

OFF: Both the heating and cooling systems are off. If the fan is set to the AUTO position, the cooling fan is also off.

COOL: Cooling system is automatically controlled by the thermostat. Heating system is off.

### Fan Switch Setting

On the T841A,B, large A, O raised letters on the right bottom edge of the wallplate refer to AUTO and ON fan settings. The Fan switch settings control the fan as follows:

AUTO: Fan operates in response to thermostat in both heating and cooling.

ON: Fan operates continuously.

## CHECKOUT

### Heating

Move the System switch on the thermostat to HEAT and the Fan switch to AUTO. Move the temperature setpoint lever to about 10°F (6°C) above the room temperature. Heating should start and the fan should run. Move the setpoint lever about 10°F (6°C) below the room temperature. Heating and fan should shut off.

#### IMPORTANT

*To prevent compressor short cycling, a minimum-off timer can be included to prevent the compressor from starting for up to five minutes from when the thermostat last turned off the compressor, or from when the system first received power.*

### Cooling



### CAUTION

**Compressor Damage Hazard.**  
**Operating cooling equipment in cold weather can damage compressor.**

Do not operate air conditioner if outdoor temperature is below 50°F (10°C).

Move the System switch on the thermostat to COOL and the Fan switch to AUTO. Move the temperature setpoint lever about 10°F (6°C) below the room temperature. Cooling and fan should start (see Note in Checkout section). Move the setpoint lever about 10°F (6°C) above the room temperature. Cooling and fan should shut off.

### Fan

Move System switch to OFF, and Fan switch to ON. The fan should run continuously. Move Fan switch to AUTO. In this position, the fan operates in response to the thermostat in both heating and cooling.

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